SEQUENCE LISTING

(1) GENERAL INFORMATION:

    (i) APPLICANT: GUERIN-MARCHAND, Claudine
                DRUILHE, Pierre

    (ii) TITLE OF INVENTION: PEPTIDE SEQUENCES SPECIFIC FOR THE
          HEPATIC STAGES OF P. FALCIPARUM BEARING EPITOPES CAPABLE
          OF STIMULATING THE T LYMPHOCYTES

    (iii) NUMBER OF SEQUENCES: 46

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    (v) COMPUTER READABLE FORM:
          (A) MEDIUM TYPE: Floppy disk
          (B) COMPUTER: IBM PC compatible
          (C) OPERATING SYSTEM: PC-DOS/MS-DOS
          (D) SOFTWARE: PatentIn Release #1.0, Version #1.30

    (vi) CURRENT APPLICATION DATA:
          (A) APPLICATION NUMBER: US 08/462,625
          (B) FILING DATE: 05-JUN-1995
          (C) CLASSIFICATION:

    (vii) PRIOR APPLICATION DATA:
          (A) APPLICATION NUMBER: US 08/098,327
          (B) FILING DATE: 24-NOV-1993

    (vii) PRIOR APPLICATION DATA:
          (A) APPLICATION NUMBER: FR 91 01286
          (B) FILING DATE: 05-FEB-1991

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          (C) REFERENCE/DOCKET NUMBER: 010830-078

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(2) INFORMATION FOR SEQ ID NO:1:

    (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 17 amino acids
          (B) TYPE: amino acid
          (C) STRANDEDNESS: single

          (D) TOPOLOGY: linear

     (ii) MOLECULE TYPE: peptide

     (ix) FEATURE:
          (A) NAME/KEY: Peptide
          (B) LOCATION: 8
          (D) OTHER INFORMATION: /note= "Amino Acid 8 wherein Xaa is
                 Glu or Gly."

      (x) PUBLICATION INFORMATION:
          (H) DOCUMENT NUMBER: WO 92/13884
          (J) PUBLICATION DATE: 20-AUG-1992

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

     Leu Ala Lys Glu Lys Leu Gln Xaa Gln Gln Ser Asp Leu Glu Gln Glu
     1   5   10   15

     Arg

(2) INFORMATION FOR SEQ ID NO:2:

     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 17 amino acids
          (B) TYPE: amino acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

     (ii) MOLECULE TYPE: peptide

     (ix) FEATURE:
          (A) NAME/KEY: Peptide
          (B) LOCATION: 1
          (D) OTHER INFORMATION: /note= "Amino Acid 1 wherein Xaa is
                 Ser or Arg."

     (ix) FEATURE:
          (A) NAME/KEY: Peptide
          (B) LOCATION: 6
          (D) OTHER INFORMATION: /note= "Amino Acid 6 wherein Xaa is
                 Glu or Asp."

     (ix) FEATURE:
          (A) NAME/KEY: Peptide
          (B) LOCATION: 8
          (D) OTHER INFORMATION: /note= "Amino Acid 8 wherein Xaa is
                 Arg or Leu."

     (ix) FEATURE:
          (A) NAME/KEY: Peptide
          (B) LOCATION: 15
          (D) OTHER INFORMATION: /note= "Amino Acid 15 wherein Xaa
                 is Glu or Gly."

      (x) PUBLICATION INFORMATION:

          (H) DOCUMENT NUMBER: WO 92/13884
          (J) PUBLICATION DATE: 20-AUG-1992

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

     Xaa Asp Leu Glu Gln Xaa Arg Xaa Ala Lys Glu Lys Leu Gln Xaa Gln
     1   5   10   15

     Gln

(2) INFORMATION FOR SEQ ID NO:3:

     (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 17 amino acids
         (B) TYPE: amino acid
         (C) STRANDEDNESS: single
         (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

   (ix) FEATURE:
         (A) NAME/KEY: Peptide
         (B) LOCATION: 2
         (D) OTHER INFORMATION: /note= "Amino Acid 2 wherein Xaa is
              Ser or Arg."

   (ix) FEATURE:
         (A) NAME/KEY: Peptide
         (B) LOCATION: 7
         (D) OTHER INFORMATION: /note= "Amino Acid 7 wherein Xaa is
              Glu or Asp."

   (ix) FEATURE:
         (A) NAME/KEY: Peptide
         (B) LOCATION: 9
         (D) OTHER INFORMATION: /note= "Amino Acid 9 wherein Xaa is
              Arg or Leu."

    (ix) FEATURE:
         (A) NAME/KEY: Peptide
         (B) LOCATION: 16
         (D) OTHER INFORMATION: /note= "Amino Acid 16 wherein Xaa
              is Glu or Gly."

     (x) PUBLICATION INFORMATION:
         (H) DOCUMENT NUMBER: WO 92/13884
         (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

     Gln Xaa Asp Leu Glu Gln Xaa Arg Xaa Ala Lys Glu Lys Leu Gln Xaa
     1   5   10   15

     Gln

(2) INFORMATION FOR SEQ ID NO:4:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 17 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

   (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 3
        (D) OTHER INFORMATION: /note= "Amino Acid 3 wherein Xaa is
            Ser or Arg."

   (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 8
        (D) OTHER INFORMATION: /note= "Amino Acid 8 wherein Xaa is
            Glu or Asp."

   (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 10
        (D) OTHER INFORMATION: /note= "Amino Acid 10 wherein Xaa
            is Arg or Leu."

   (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 17
        (D) OTHER INFORMATION: /note= "Amino Acid 17 wherein Xaa
            is Glu or Gly."

    (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

   Gln Gln Xaa Asp Leu Glu Gln Xaa Arg Xaa Ala Lys Glu Lys Leu Gln
   1   5   10   15

   Xaa

(2) INFORMATION FOR SEQ ID NO:5:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 17 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

   (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 1

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        (D) OTHER INFORMATION: /note= "Amino Acid 1 wherein Xaa is
              Glu or Gly."

 (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 4
        (D) OTHER INFORMATION: /note= "Amino Acid 4 wherein Xaa is
              Ser or Arg."

 (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 9
        (D) OTHER INFORMATION: /note= "Amino Acid 9 wherein Xaa is
              Glu or Asp."

 (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 11
        (D) OTHER INFORMATION: /note= "Amino Acid 11 wherein Xaa
              is Arg or Leu."

  (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

 Xaa Gln Gln Xaa Asp Leu Glu Gln Xaa Arg Xaa Ala Lys Glu Lys Leu
 1               5                   10                  15

 Gln

(2) INFORMATION FOR SEQ ID NO:6:

  (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 17 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

 (ii) MOLECULE TYPE: peptide

 (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 2
        (D) OTHER INFORMATION: /note= "Amino Acid 2 wherein Xaa is
              Glu or Gly."

 (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 5

        (D) OTHER INFORMATION: /note= "Amino Acid 5 wherein Xaa is
              Ser or Arg."

 (ix) FEATURE:
```

```
        (A) NAME/KEY: Peptide
        (B) LOCATION: 10
        (D) OTHER INFORMATION: /note= "Amino Acid 10 wherein Xaa
            is Glu or Asp."

  (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 12
        (D) OTHER INFORMATION: /note= "Amino Acid 12 wherein Xaa
            is Arg or Leu."

   (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

  (xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

  Gln Xaa Gln Gln Xaa Asp Leu Glu Gln Xaa Arg Xaa Ala Lys Glu Lys
  1               5                   10                  15

  Leu

(2) INFORMATION FOR SEQ ID NO:7:

   (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 17 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

  (ii) MOLECULE TYPE: peptide

  (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 3
        (D) OTHER INFORMATION: /note= "Amino Acid 3 wherein Xaa is
            Glu or Gly."

  (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 6
        (D) OTHER INFORMATION: /note= "Amino Acid 6 wherein Xaa is
            Ser or Arg."

  (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 11
        (D) OTHER INFORMATION: /note= "Amino Acid 11 wherein Xaa
            is Glu or Asp."

  (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 13
        (D) OTHER INFORMATION: /note= "Amino Acid 13 wherein Xaa
            is Arg or Leu."
```

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

    Leu Gln Xaa Gln Gln Xaa Asp Leu Glu Gln Xaa Arg Xaa Ala Lys Glu
    1   5   10   15

    Lys

(2) INFORMATION FOR SEQ ID NO:8:

    (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 17 amino acids
         (B) TYPE: amino acid
         (C) STRANDEDNESS: single
         (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

   (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 4
        (D) OTHER INFORMATION: /note= "Amino Acid 4 wherein Xaa is
             Glu or Gly."

   (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 7
        (D) OTHER INFORMATION: /note= "Amino Acid 7 wherein Xaa is
             Ser or Arg."

   (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 12
        (D) OTHER INFORMATION: /note= "Amino Acid 12 wherein Xaa
             is Glu or Asp."

    (ix) FEATURE:
         (A) NAME/KEY: Peptide
         (B) LOCATION: 14
         (D) OTHER INFORMATION: /note= "Amino Acid 14 wherein Xaa
              is Arg or Leu."

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

    Lys Leu Gln Xaa Gln Gln Xaa Asp Leu Glu Gln Xaa Arg Xaa Ala Lys
    1   5   10   15

    Glu

(2) INFORMATION FOR SEQ ID NO:9:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 17 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 5
        (D) OTHER INFORMATION: /note= "Amino Acid 5 wherein Xaa is
            Glu or Gly."

    (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 8
        (D) OTHER INFORMATION: /note= "Amino Acid 8 wherein Xaa is
            Ser or Arg."

    (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 13
        (D) OTHER INFORMATION: /note= "Amino Acid 13 wherein Xaa
            is Glu or Asp."

    (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 15
        (D) OTHER INFORMATION: /note= "Amino Acid 15 wherein Xaa
            is Arg or Leu."

    (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

Glu Lys Leu Gln Xaa Gln Gln Xaa Asp Leu Glu Gln Xaa Arg Xaa Ala
1   5   10   15

Lys

(2) INFORMATION FOR SEQ ID NO:10:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 17 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (ix) FEATURE:

```
        (A) NAME/KEY: Peptide
        (B) LOCATION: 6
        (D) OTHER INFORMATION: /note= "Amino Acid 6 wherein Xaa is
            Glu or Gly."

    (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 9
        (D) OTHER INFORMATION: /note= "Amino Acid 9 wherein Xaa is
            Ser or Arg."

    (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 14
        (D) OTHER INFORMATION: /note= "Amino Acid 14 wherein Xaa
            is Glu or Asp."

    (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 16
        (D) OTHER INFORMATION: /note= "Amino Acid 16 wherein Xaa
            is Arg or Leu."

    (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

   Lys Glu Lys Leu Gln Xaa Gln Gln Xaa Asp Leu Glu Gln Xaa Arg Xaa
   1               5                   10                      15

   Ala

(2) INFORMATION FOR SEQ ID NO:11:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 17 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

   (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 7
        (D) OTHER INFORMATION: /note= "Amino Acid 7 wherein Xaa is
            Glu or Gly."

   (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 10
        (D) OTHER INFORMATION: /note= "Amino Acid 10 wherein Xaa
            is Ser or Arg."
```

```
     (ix) FEATURE:
          (A) NAME/KEY: Peptide
          (B) LOCATION: 15
          (D) OTHER INFORMATION: /note= "Amino Acid 15 wherein Xaa
                  is Glu or Asp."

     (ix) FEATURE:
          (A) NAME/KEY: Peptide
          (B) LOCATION: 17
          (D) OTHER INFORMATION: /note= "Amino Acid 17 wherein Xaa
                  is Arg or Leu."

      (x) PUBLICATION INFORMATION:
          (H) DOCUMENT NUMBER: WO 92/13884
          (J) PUBLICATION DATE: 20-AUG-1992

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

     Ala Lys Glu Lys Leu Gln Xaa Gln Gln Xaa Asp Leu Glu Gln Xaa Arg
     1               5                   10                  15

     Xaa

(2) INFORMATION FOR SEQ ID NO:12:

     (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 17 amino acids
         (B) TYPE: amino acid
         (C) STRANDEDNESS: single
         (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (ix) FEATURE:
         (A) NAME/KEY: Peptide
         (B) LOCATION: 1
         (D) OTHER INFORMATION: /note= "Amino Acid 1 wherein Xaa is
                 Arg or Leu."

    (ix) FEATURE:
         (A) NAME/KEY: Peptide
         (B) LOCATION: 8
         (D) OTHER INFORMATION: /note= "Amino Acid 8 wherein Xaa is
                 Glu or Gly."

    (ix) FEATURE:
         (A) NAME/KEY: Peptide
         (B) LOCATION: 11
         (D) OTHER INFORMATION: /note= "Amino Acid 11 wherein Xaa
                 is Ser or Arg."

    (ix) FEATURE:
         (A) NAME/KEY: Peptide
         (B) LOCATION: 16
         (D) OTHER INFORMATION: /note= "Amino Acid 16 wherein Xaa
                 is Glu or Asp."
```

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

    Xaa Ala Lys Glu Lys Leu Gln Xaa Gln Gln Xaa Asp Leu Glu Gln Xaa
    1   5   10   15

    Arg

(2) INFORMATION FOR SEQ ID NO:13:

    (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 17 amino acids
         (B) TYPE: amino acid
         (C) STRANDEDNESS: single
         (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

   (ix) FEATURE:
         (A) NAME/KEY: Peptide
         (B) LOCATION: 2
         (D) OTHER INFORMATION: /note= "Amino Acid 2 wherein Xaa is
              Arg or Leu."

   (ix) FEATURE:
         (A) NAME/KEY: Peptide
         (B) LOCATION: 9
         (D) OTHER INFORMATION: /note= "Amino Acid 9 wherein Xaa is
              Glu or Gly."

   (ix) FEATURE:
         (A) NAME/KEY: Peptide
         (B) LOCATION: 12
         (D) OTHER INFORMATION: /note= "Amino Acid 12 wherein Xaa
              is Ser or Arg."

   (ix) FEATURE:
         (A) NAME/KEY: Peptide
         (B) LOCATION: 17
         (D) OTHER INFORMATION: /note= "Amino Acid 17 wherein Xaa
              is Glu or Asp."

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

    Arg Xaa Ala Lys Glu Lys Leu Gln Xaa Gln Gln Xaa Asp Leu Glu Gln
    1   5   10   15

    Xaa

(2) INFORMATION FOR SEQ ID NO:14:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 17 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 1
        (D) OTHER INFORMATION: /note= "Amino Acid 1 wherein Xaa is
            Glu or Asp."

    (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 3
        (D) OTHER INFORMATION: /note= "Amino Acid 3 wherein Xaa is
            Arg or Leu."

    (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 10
        (D) OTHER INFORMATION: /note= "Amino Acid 10 wherein Xaa
            is Glu or Gly."

    (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 13
        (D) OTHER INFORMATION: /note= "Amino Acid 13 wherein Xaa
            is Ser or Arg."

    (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

Xaa Arg Xaa Ala Lys Glu Lys Leu Gln Xaa Gln Gln Xaa Asp Leu Glu
1   5   10   15

Gln

(2) INFORMATION FOR SEQ ID NO:15:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 17 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (ix) FEATURE:

```
          (A) NAME/KEY: Peptide
          (B) LOCATION: 2
          (D) OTHER INFORMATION: /note= "Amino Acid 2 wherein Xaa is
               Glu or Asp."

     (ix) FEATURE:
          (A) NAME/KEY: Peptide
          (B) LOCATION: 4
          (D) OTHER INFORMATION: /note= "Amino Acid 4 wherein Xaa is
               Arg or Leu."

     (ix) FEATURE:
          (A) NAME/KEY: Peptide
          (B) LOCATION: 11
          (D) OTHER INFORMATION: /note= "Amino Acid 11 wherein Xaa
               is Glu or Gly."

     (ix) FEATURE:
          (A) NAME/KEY: Peptide
          (B) LOCATION: 14
          (D) OTHER INFORMATION: /note= "Amino Acid 14 wherein Xaa
               is Ser or Arg."

      (x) PUBLICATION INFORMATION:
          (H) DOCUMENT NUMBER: WO 92/13884
          (J) PUBLICATION DATE: 20-AUG-1992

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

     Gln Xaa Arg Xaa Ala Lys Glu Lys Leu Gln Xaa Gln Gln Xaa Asp Leu
     1               5                   10                  15

     Glu

(2) INFORMATION FOR SEQ ID NO:16:

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 17 amino acids
          (B) TYPE: amino acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

     (ii) MOLECULE TYPE: peptide


     (ix) FEATURE:
          (A) NAME/KEY: Peptide
          (B) LOCATION: 3
          (D) OTHER INFORMATION: /note= "Amino Acid 3 wherein Xaa is
               Glu or Asp."

     (ix) FEATURE:
          (A) NAME/KEY: Peptide
          (B) LOCATION: 5
          (D) OTHER INFORMATION: /note= "Amino Acid 5 wherein Xaa is
               Arg or Leu."
```

     (ix) FEATURE:
          (A) NAME/KEY: Peptide
          (B) LOCATION: 12
          (D) OTHER INFORMATION: /note= "Amino Acid 12 wherein Xaa
                is Glu or Gly."

     (ix) FEATURE:
          (A) NAME/KEY: Peptide
          (B) LOCATION: 15
          (D) OTHER INFORMATION: /note= "Amino Acid 15 wherein Xaa
                is Ser or Arg."

      (x) PUBLICATION INFORMATION:
          (H) DOCUMENT NUMBER: WO 92/13884
          (J) PUBLICATION DATE: 20-AUG-1992

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

     Glu Gln Xaa Arg Xaa Ala Lys Glu Lys Leu Gln Xaa Gln Gln Xaa Asp
     1   5   10   15

     Leu

(2) INFORMATION FOR SEQ ID NO:17:

     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 17 amino acids
          (B) TYPE: amino acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (ix) FEATURE:
          (A) NAME/KEY: Peptide
          (B) LOCATION: 4
          (D) OTHER INFORMATION: /note= "Amino Acid 4 wherein Xaa is
                Glu or Asp."

     (ix) FEATURE:
          (A) NAME/KEY: Peptide
          (B) LOCATION: 6
          (D) OTHER INFORMATION: /note= "Amino Acid 6 wherein Xaa is
                Arg or Leu."

     (ix) FEATURE:
          (A) NAME/KEY: Peptide
          (B) LOCATION: 13
          (D) OTHER INFORMATION: /note= "Amino Acid 13 wherein Xaa
                is Glu or Gly."

     (ix) FEATURE:
          (A) NAME/KEY: Peptide
          (B) LOCATION: 16
          (D) OTHER INFORMATION: /note= "Amino Acid 16 wherein Xaa
                is Ser or Arg."

(x) PUBLICATION INFORMATION:
    (H) DOCUMENT NUMBER: WO 92/13884
    (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

Leu Glu Gln Xaa Arg Xaa Ala Lys Glu Lys Leu Gln Xaa Gln Gln Xaa
1   5   10   15

Asp

(2) INFORMATION FOR SEQ ID NO:18:

(i) SEQUENCE CHARACTERISTICS:
    (A) LENGTH: 17 amino acids
    (B) TYPE: amino acid
    (C) STRANDEDNESS: single
    (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
    (A) NAME/KEY: Peptide
    (B) LOCATION: 5
    (D) OTHER INFORMATION: /note= "Amino Acid 5 wherein Xaa is
        Glu or Asp."

(ix) FEATURE:
    (A) NAME/KEY: Peptide
    (B) LOCATION: 7
    (D) OTHER INFORMATION: /note= "Amino Acid 7 wherein Xaa is
        Arg or Leu."

(ix) FEATURE:
    (A) NAME/KEY: Peptide
    (B) LOCATION: 14
    (D) OTHER INFORMATION: /note= "Amino Acid 14 wherein Xaa
        is Glu or Gly."

(ix) FEATURE:
    (A) NAME/KEY: Peptide
    (B) LOCATION: 17
    (D) OTHER INFORMATION: /note= "Amino Acid 17 wherein Xaa
        is Ser or Arg."

(x) PUBLICATION INFORMATION:
    (H) DOCUMENT NUMBER: WO 92/13884
    (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

Asp Leu Glu Gln Xaa Arg Xaa Ala Lys Glu Lys Leu Gln Xaa Gln Gln
1   5   10   15

Xaa

(2) INFORMATION FOR SEQ ID NO:19:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 107 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

    (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

```
Arg Lys Ala Asp Thr Lys Lys Asn Leu Glu Arg Lys Lys Glu His Gly
1               5                   10                  15

Asp Ile Leu Ala Glu Asp Leu Tyr Gly Arg Leu Glu Ile Pro Ala Ile
                20                  25                  30

Glu Leu Pro Ser Glu Asn Glu Arg Gly Tyr Tyr Ile Pro His Gln Ser
            35                  40                  45

Ser Leu Pro Gln Asp Asn Arg Gly Asn Ser Arg Asp Ser Lys Glu Ile
    50                  55                  60

Ser Ile Ile Glu Lys Thr Asn Arg Glu Ser Ile Thr Thr Asn Val Glu
65                  70                  75                  80

Gly Arg Arg Asp Ile His Lys Gly His Leu Glu Glu Lys Lys Asp Gly
                85                  90                  95

Ser Ile Lys Pro Glu Gln Lys Glu Asp Lys Ser
            100                 105
```

(2) INFORMATION FOR SEQ ID NO:20:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 117 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

    (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

```
Leu Gln Glu Gln Gln Arg Asp Leu Glu Gln Arg Lys Ala Asp Thr Lys
1               5                   10                  15
```

```
Lys Asn Leu Glu Arg Lys Lys Glu His Gly Asp Ile Leu Ala Glu Asp
            20                  25                  30

Leu Tyr Gly Arg Leu Glu Ile Pro Ala Ile Glu Leu Pro Ser Glu Asn
        35                  40                  45

Glu Arg Gly Tyr Tyr Ile Pro His Gln Ser Ser Leu Pro Gln Asp Asn
    50                  55                  60

Arg Gly Asn Ser Arg Asp Ser Lys Glu Ile Ser Ile Ile Glu Lys Thr
65                  70                  75                  80

Asn Arg Glu Ser Ile Thr Thr Asn Val Glu Gly Arg Arg Asp Ile His
                85                  90                  95

Lys Gly His Leu Glu Glu Lys Lys Asp Gly Ser Ile Lys Pro Glu Gln
            100                 105                 110

Lys Glu Asp Lys Ser
            115
```

(2) INFORMATION FOR SEQ ID NO:21:

   (i) SEQUENCE CHARACTERISTICS:
      (A) LENGTH: 27 amino acids
      (B) TYPE: amino acid
      (C) STRANDEDNESS: single
      (D) TOPOLOGY: linear

  (ii) MOLECULE TYPE: peptide

   (x) PUBLICATION INFORMATION:
      (H) DOCUMENT NUMBER: WO 92/13884
      (J) PUBLICATION DATE: 20-AUG-1992

  (xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

```
Asp Thr Lys Lys Asn Leu Glu Arg Lys Lys Glu His Gly Asp Ile Leu
1               5                   10                  15

Ala Glu Asp Leu Tyr Gly Arg Leu Glu Ile Pro
            20                  25
```

(2) INFORMATION FOR SEQ ID NO:22:

   (i) SEQUENCE CHARACTERISTICS:
      (A) LENGTH: 24 amino acids
      (B) TYPE: amino acid
      (C) STRANDEDNESS: single
      (D) TOPOLOGY: linear

  (ii) MOLECULE TYPE: peptide

   (x) PUBLICATION INFORMATION:
      (H) DOCUMENT NUMBER: WO 92/13884
      (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

```
Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Arg Asp Leu Glu
1               5                   10                      15

Gln Arg Lys Ala Asp Thr Lys Lys
            20
```

(2) INFORMATION FOR SEQ ID NO:23:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 31 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

```
Asn Ser Arg Asp Ser Lys Glu Ile Ser Ile Ile Glu Lys Thr Asn Arg
1               5                   10                      15

Glu Ser Ile Thr Thr Asn Val Glu Gly Arg Arg Asp Ile His Lys
            20                  25                  30
```

(2) INFORMATION FOR SEQ ID NO:24:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 151 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

```
Arg Asp Glu Leu Phe Asn Glu Leu Leu Asn Ser Val Asp Val Asn Gly
1               5                   10                      15

Glu Val Lys Glu Asn Ile Leu Glu Glu Ser Gln Val Asn Asp Asp Ile
            20                  25                  30

Phe Asn Ser Leu Val Lys Ser Val Gln Gln Glu Gln Gln His Asn Val
            35                  40                  45
```

```
Glu Glu Lys Val Glu Glu Ser Val Glu Glu Asn Asp Glu Glu Ser Val
    50                  55                  60
```

```
Glu Glu Asn Val Glu Glu Asn Val Glu Glu Asn Asp Asp Gly Ser Val
65                  70                  75                  80
```

```
Ala Ser Ser Val Glu Glu Ser Ile Ala Ser Ser Val Asp Glu Ser Ile
                85                  90                  95
```

```
Asp Ser Ser Ile Glu Glu Asn Val Ala Pro Thr Val Glu Glu Ile Val
            100                 105                 110
```

```
Ala Pro Thr Val Glu Glu Ile Val Ala Pro Ser Val Val Glu Lys Cys
            115                 120                 125
```

```
Ala Pro Ser Val Glu Glu Ser Val Ala Pro Ser Val Glu Glu Ser Val
    130                 135                 140
```

```
Ala Glu Met Leu Lys Glu Arg
145                 150
```

(2) INFORMATION FOR SEQ ID NO:25:

(i) SEQUENCE CHARACTERISTICS:
    (A) LENGTH: 47 amino acids
    (B) TYPE: amino acid
    (C) STRANDEDNESS: single
    (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(x) PUBLICATION INFORMATION:
    (H) DOCUMENT NUMBER: WO 92/13884
    (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

```
Arg Asp Glu Leu Phe Asn Glu Leu Leu Asn Ser Val Asp Val Asn Gly
1               5                   10                  15
```

```
Glu Val Lys Glu Asn Ile Leu Glu Glu Ser Gln Val Asn Asp Asp Ile
            20                  25                  30
```

```
Phe Asn Ser Leu Val Lys Ser Val Gln Gln Glu Gln Gln His Asn
        35                  40                  45
```

(2) INFORMATION FOR SEQ ID NO:26:

(i) SEQUENCE CHARACTERISTICS:
    (A) LENGTH: 26 amino acids
    (B) TYPE: amino acid
    (C) STRANDEDNESS: single
    (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

    (x) PUBLICATION INFORMATION:
         (H) DOCUMENT NUMBER: WO 92/13884
         (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

    Asp Glu Leu Phe Asn Glu Leu Leu Asn Ser Val Asp Val Asn Gly Glu
    1   5   10   15

    Val Lys Glu Asn Ile Leu Glu Glu Ser Gln
                20   25

(2) INFORMATION FOR SEQ ID NO:27:

    (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 27 amino acids
         (B) TYPE: amino acid
         (C) STRANDEDNESS: single
         (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (x) PUBLICATION INFORMATION:
         (H) DOCUMENT NUMBER: WO 92/13884
         (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

    Leu Glu Glu Ser Gln Val Asn Asp Asp Ile Phe Ser Asn Ser Leu Val
    1   5   10   15

    Lys Ser Val Gln Gln Glu Gln Gln His Asn Val
                20   25

(2) INFORMATION FOR SEQ ID NO:28:

    (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 27 amino acids
         (B) TYPE: amino acid
         (C) STRANDEDNESS: single
         (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (x) PUBLICATION INFORMATION:
         (H) DOCUMENT NUMBER: WO 92/13884
         (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

    Val Glu Lys Cys Ala Pro Ser Val Glu Glu Ser Val Ala Pro Ser Val
    1   5   10   15

    Glu Glu Ser Val Ala Glu Met Leu Lys Glu Arg
                20   25

(2) INFORMATION FOR SEQ ID NO:29:

     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 17 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: DNA (genomic)

     (x) PUBLICATION INFORMATION:
          (H) DOCUMENT NUMBER: WO 92/13884
          (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

TTGTTCTAGA TCGCTTT   17

(2) INFORMATION FOR SEQ ID NO:30:

     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 15 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: DNA (genomic)

     (x) PUBLICATION INFORMATION:
          (H) DOCUMENT NUMBER: WO 92/13884
          (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

AAAGAAGATA AATCT   15

(2) INFORMATION FOR SEQ ID NO:31:

     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 316 amino acids
          (B) TYPE: amino acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

     (x) PUBLICATION INFORMATION:
          (H) DOCUMENT NUMBER: WO 92/13884
          (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

     Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln
     1   5   10   15

```
Gln Ser Asp Leu Glu Gln Asp Arg Leu Ala Lys Glu Lys Leu Gln Glu
            20                      25                  30

Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu Gln
        35                  40                  45

Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu
    50                  55                  60

Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys
65                  70                  75                  80

Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Asp Arg Leu Ala Lys Glu
                85                  90                  95

Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys
            100                 105                 110

Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala
            115                 120                 125

Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg
    130                 135                 140

Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg
145                 150                 155                 160

Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu
                165                 170                 175

Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln
            180                 185                 190

Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Arg Asp Leu Glu
            195                 200                 205

Gln Arg Lys Ala Asp Thr Lys Lys Asn Leu Glu Arg Lys Lys Glu His
    210                 215                 220

Gly Asp Ile Leu Ala Glu Asp Leu Tyr Gly Arg Leu Glu Ile Pro Ala
225                 230                 235                 240

Ile Glu Leu Pro Ser Glu Asn Glu Arg Gly Tyr Tyr Ile Pro His Gln
                245                 250                 255

Ser Ser Leu Pro Gln Asp Asn Arg Gly Asn Ser Arg Asp Ser Lys Glu
            260                 265                 270

Ile Ser Ile Ile Glu Lys Thr Asn Arg Glu Ser Ile Thr Thr Asn Val
            275                 280                 285

Glu Gly Arg Arg Asp Ile His Lys Gly His Leu Glu Glu Lys Lys Asp
    290                 295                 300

Gly Ser Ile Lys Pro Glu Gln Lys Glu Asp Lys Ser
305                 310                 315
```

(2) INFORMATION FOR SEQ ID NO:32:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 950 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

  (ii) MOLECULE TYPE: DNA (genomic)

    (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

```
AAAGCGATCT AGAACAAGAG AGACGTGCTA AAGAAAAGTT GCAAGAACAA CAAAGCGATT      60

TAGAACAAGA TAGACTTGCT AAAGAAAAGT TACAAGAGCA GCAAAGCGAT TTAGAACAAG     120

AGAGACTTGC TAAAGAAAAG TTGCAAGAAC AACAAAGCGA TCTAGAACAA GAGAGACGTG     180

CTAAAGAAAA GTTGCAAGAA CAACAAAGCG ATTTAGAACA AGAGAGACGT GCTAAAGAAA     240

AGTTGCAAGA ACAACAAAGC GATTTAGAAC AAGATAGACT TGCTAAAGAA AAGTTACAAG     300

AGCAGCAAAG CGATTTAGAA CAAGAGAGAC GTGCTAAAGA AAAGTTGCAA GAACAACAAA     360

GCGATTTAGA ACAAGAGAGA CGTGCTAAAG AAAAGTTGCA AGAACAACAA AGCGATTTAG     420

AACAAGAGAG ACTTGCTAAA GAAAAGTTGC AAGAACAACA AAGCGATTTA GAACAAGAGA     480

GACGTGCTAA AGAAAAGTTG CAAGAACAAC AAAGCGATTT AGAACAAGAG AGACGTGCTA     540

AAGAAAAGTT GCAAGAACAA CAAAGCGATT TAGAACAAGA GAGACGTGCT AAAGAAAAGT     600

TGCAAGAGCA GCAAAGAGAT TTAGAACAAA GGAAGGCTGA TACGAAAAAA AATTTAGAAA     660

GAAAAAGGA ACATGGAGAT ATATTAGCAG AGGATTTATA TGGTCGTTTA GAAATACCAG      720

CTATAGAACT TCCATCAGAA AATGAACGTG GATATTATAT ACCACATCAA TCTTCTTTAC     780

CTCAGGACAA CAGAGGGAAT AGTAGAGATT CCAAGGAAAT ATCTATAATA GAAAAAACAA     840

ATAGAGAATC TATTACAACA AATGTTGAAG ACGAAGGGA TATACATAAA GGACATCTTG      900

AAGAAAAGAA AGATGGTTCA ATAAAACCAG AACAAAAAGA AGATAAATCT             950
```

(2) INFORMATION FOR SEQ ID NO:33:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 464 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

```
    (ii) MOLECULE TYPE: DNA (genomic)

    (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:
```

```
GAATTCCGTG ATGAACTTTT TAATGAATTA TTAAATAGTG TAGATGTTAA TGGAGAAGTA    60

AAAGAAAATA TTTTGGAGGA AAGTCAAGTT AATGACGATA TTTTTAATAG TTTAGTAAAA    120

AGTGTTCAAC AAGAACAACA ACACAATGTT GAAGAAAAAG TTGAAGAAAG TGTAGAAGAA    180

AATGACGAAG AAAGTGTAGA AGAAAATGTA GAAGAAAATG TAGAAGAAAA TGACGACGGA    240

AGTGTAGCCT CAAGTGTTGA AGAAAGTATA GCTTCAAGTG TTGATGAAAG TATAGATTCA    300

AGTATTGAAG AAAAATGTAGC TCCAACTGTT GAAGAAATCG TAGCTCCAAC TGTTGAAGAA    360

ATTGTAGCTC CAAGTGTTGT AGAAAAGTGT GCTCCAAGTG TTGAAGAAAG TGTAGCTCCA    420

AGTGTTGAAG AAAGTGTAGC TGAAATGTTG AAGGAAAGGA ATTC                      464
```

```
(2) INFORMATION FOR SEQ ID NO:34:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 988 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: DNA (genomic)

    (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:
```

```
AAAGTATACA TCTTCCTTCT TTACTTCTTA AAATGAAACA TATTTTGTAC ATATCATTTT    60

ACTTTATCCT TGTTAATTTA TTGATATTTC ATATAAATGG AAAGATAATA AAGAATTCTG    120

AAAAAGATGA AATCATAAAA TCTAACTTGA GAAGTGGTTC TTCAAATTCT AGGAATCGAA    180

TAAATGAGGA AAATCACGAG AAGAAACACG TTTTATCTCA TAATTCATAT GAGAAAACTA    240

AAAATAATGA AAATAATAAA TTTTTCGATA AGGATAAAGA GTTAACGATG TCTAATGTAA    300

AAAATGTGTC ACAAACAAAT TTCAAAAGTC TTTTAAGAAA TCTTGGTGTT TCAGAGAATA    360

TATTCCTTAA AGAAAATAAA TTAAATAAGG AAGGGAAATT AATTGAACAC ATAATAAATG    420

ATGATGACGA TAAAAAAAAA TATATTAAAG GGCAAGACGA AAACAGACAA GAAGATCTTG    480
```

```
AAGAAAAAGC AGCTAAAGAA AAGTTACAGG GGCAACAAAG CGATTCAGAA CAAGAGAGAC    540

GTGCTAAAGA AAAGTTGCAA GAACAACAAA GCGATTTAGA ACAAGAGAGA CTTGCTAAAG    600

AAAAGTTGCA AGAACAACAA AGCGATTTAG AACAAGAGAG ACGTGCTAAA GAAAAGTTGC    660

AAGAACAACA AAGCGATTTA GAACAAGAGA GACTTGCTAA AGAAAAGTTG CAAGAACAAC    720

AAAGCGATTT AGAACAAGAG AGACGTGCTA AAGAAAAGTT GCAAGAACAA CAAAGCGATT    780

TAGAACAAGA GAGACGTGCT AAAGAAAAGT TGCAAGAACA ACAAAGCGAT TTAGAACAAG    840

AGAGACTTGC TAAAGAAAAG TTACAAGAGC AGCAAAGCGA TTTAGAACAA GATAGACTTG    900

CTAAAGAAAA GTTGCAAGAA CAACAAAGCG ATTTAGAACA AGAGAGACGT GCTAAAGAAA    960

GGTTGCAAGA ACAACAAAGC GATTTAGA                                       988
```

(2) INFORMATION FOR SEQ ID NO:35:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 12 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: DNA (genomic)

    (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

```
ATGAAACATA TT                                                        12
```

(2) INFORMATION FOR SEQ ID NO:36:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 12 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: DNA (genomic)

    (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:

```
AAGCGATTTA GA                                                        12
```

(2) INFORMATION FOR SEQ ID NO:37:

```
    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 954 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: DNA (genomic)

   (ix) FEATURE:
        (A) NAME/KEY: CDS
        (B) LOCATION: 1..954

    (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:
```

```
ATG AAA CAT ATT TTG TAC ATA TCA TTT TAC TTT ATC CTT GTT AAT TTA        48
Met Lys His Ile Leu Tyr Ile Ser Phe Tyr Phe Ile Leu Val Asn Leu
1               5                   10                  15

TTG ATA TTT CAT ATA AAT GGA AAG ATA ATA AAG AAT TCT GAA AAA GAT        96
Leu Ile Phe His Ile Asn Gly Lys Ile Ile Lys Asn Ser Glu Lys Asp
            20                  25                  30

GAA ATC ATA AAA TCT AAC TTG AGA AGT GGT TCT TCA AAT TCT AGG AAT       144
Glu Ile Ile Lys Ser Asn Leu Arg Ser Gly Ser Ser Asn Ser Arg Asn
        35                  40                  45

CGA ATA AAT GAG GAA AAT CAC GAG AAG AAA CAC GTT TTA TCT CAT AAT       192
Arg Ile Asn Glu Glu Asn His Glu Lys Lys His Val Leu Ser His Asn
    50                  55                  60

TCA TAT GAG AAA ACT AAA AAT AAT GAA AAT AAT AAA TTT TTC GAT AAG       240
Ser Tyr Glu Lys Thr Lys Asn Asn Glu Asn Asn Lys Phe Phe Asp Lys
65                  70                  75                  80

GAT AAA GAG TTA ACG ATG TCT AAT GTA AAA AAT GTG TCA CAA ACA AAT       288
Asp Lys Glu Leu Thr Met Ser Asn Val Lys Asn Val Ser Gln Thr Asn
                85                  90                  95

TTC AAA AGT CTT TTA AGA AAT CTT GGT GTT TCA GAG AAT ATA TTC CTT       336
Phe Lys Ser Leu Leu Arg Asn Leu Gly Val Ser Glu Asn Ile Phe Leu
            100                 105                 110

AAA GAA AAT AAA TTA AAT AAG GAA GGG AAA TTA ATT GAA CAC ATA ATA       384
Lys Glu Asn Lys Leu Asn Lys Glu Gly Lys Leu Ile Glu His Ile Ile
        115                 120                 125

AAT GAT GAT GAC GAT AAA AAA AAA TAT ATT AAA GGG CAA GAC GAA AAC       432
Asn Asp Asp Asp Asp Lys Lys Lys Tyr Ile Lys Gly Gln Asp Glu Asn
    130                 135                 140

AGA CAA GAA GAT CTT GAA GAA AAA GCA GCT AAA GAA AAG TTA CAG GGG       480
Arg Gln Glu Asp Leu Glu Glu Lys Ala Ala Lys Glu Lys Leu Gln Gly
```

| 145 | | | | | 150 | | | | | 155 | | | | | 160 |

```
CAA CAA AGC GAT TCA GAA CAA GAG AGA CGT GCT AAA GAA AAG TTG CAA        528
Gln Gln Ser Asp Ser Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu Gln
                165                 170                 175

GAA CAA CAA AGC GAT TTA GAA CAA GAG AGA CTT GCT AAA GAA AAG TTG        576
Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Leu Ala Lys Glu Lys Leu
            180                 185                 190

CAA GAA CAA CAA AGC GAT TTA GAA CAA GAG AGA CGT GCT AAA GAA AAG        624
Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys
        195                 200                 205

TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA GAG AGA CTT GCT AAA GAA        672
Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Leu Ala Lys Glu
    210                 215                 220

AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA GAG AGA CGT GCT AAA        720
Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys
225                 230                 235                 240

GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA GAG AGA CGT GCT        768
Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala
            245                 250                 255

AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA GAG AGA CTT        816
Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Leu
        260                 265                 270

GCT AAA GAA AAG TTA CAA GAG CAG CAA AGC GAT TTA GAA CAA GAT AGA        864
Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Asp Arg
    275                 280                 285

CTT GCT AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA GAG        912
Leu Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu
    290                 295                 300

AGA CGT GCT AAA GAA AGG TTG CAA GAA CAA CAA AGC GAT TTA               954
Arg Arg Ala Lys Glu Arg Leu Gln Glu Gln Gln Ser Asp Leu
305                 310                 315
```

(2) INFORMATION FOR SEQ ID NO:38:

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 1493 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

     (ii) MOLECULE TYPE: DNA (genomic)

      (x) PUBLICATION INFORMATION:
          (H) DOCUMENT NUMBER: WO 92/13884
          (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:38:

```
CAAGAACAAC AAAGCGATCT AGAACAAGAG AGACGTGCTA AAGAAAAGTT GCAAGAACAA      60

CAAAGCGATT TAGAACAAGA TAGACTTGCT AAAGAAAAGT TACAAGAGCA GCAAAGCGAT     120

TTAGAACAAG AGAGACTTGC TAAGAAAAGT TGCAAGAACA ACAAAGCGAT CTAGAACAAG     180

AGAGACGTGC TAAAGAAAAG TTGCAAGAAC AACAAAGCGA TTTAGAACAA GAGAGACGTG     240

CTAAAGAAAA GTTGCAAGAA CAACAAAGCG ATTTAGAACA AGATAGACTT GCTAAAGAAA     300

AGTTACAAGA GCAGCAAAGC GATTTAGAAC AAGAGAGACG TGCTAAAGAA AAGTTGCAAG     360

AACAACAAAG CGATTTAGAA CAAGAGAGAC GTGCTAAGAA AAGTTGCAAG AACAACAAAG     420

CGATTTAGAA CAAGAGAGAC TTGCTAAAGA AAAGTTGCAA GAACAACAAA GCGATTTAGA     480

ACAAGAGAGA CGTGCTAAAG AAAAGTTGCA AGAACAACAA AGCGATTTAG AACAAGAGAG     540

ACGTGCTAAG AAAAGTTGCA AGAACAACAA AGCGATTTAG AACAAGAGAG ACGTGCTAAA     600

GAAAAGTTGC AAGAGCAGCA AAGAGATTTA GAACAAAGGA AGGCTGATAC GAAAAAAAAT     660

TTAGAAAGAA AAAAGGAACA TGGAGATATA TTAGCAGAGG ATTTATATGG TCGTTTAGAA     720

ATAGCAGCTA TAGAACTTCC ATCAGAAAAT GAACGTGGAT ATTATATACC ACATCAATCT     780

TCTTTACCTC AGGACAACAG AGGGAATAGT AGAGATTCCA AGGAAATATC TATAATAGAA     840

AAAACAAATA GAGAATCTAT TACAACAAAT GTTGAAGGAC GAAGGGATAT ACATAAAGGA     900

CATCTTGAAG AAAAGAAAGA TGGTTCAATA AAACCAGAAC AAAAAGAAGA TAAATCTGCT     960

GACATACAAA ATCATACATT AGAGACAGTA AATATTTCTG ATGTTAATGA TTTTCAAATA    1020

AGTAAGTATG AGGATGAAAT AAGTGCTGAA TATGACGATT CATTAATAGA TGAAGAAGAA    1080

GATGATGAAG ACTTAGACGA ATTTAAGCCT ATTGTGCAAT ATGACAATTT CCAAGATGAA    1140

GAAAACATAG GAATTTATAA AGAACTAGAA GATTTGATAG AGAAAAATGA AAATTTAGAT    1200

GATTTAGATG AAGGAATAGA AAAATCATCA GAAGAATTAT CTGAAGAAAA AATAAAAAAA    1260

GGAAAGAAAT ATGAAAAAAC AAAGGATAAT AATTTTAAAC CAAATGATAA AAGTTTGTAT    1320

GATGAGCATA TTAAAAAAATA TAAAAATGAT AAGCAGGTTA ATAAGGAAAA GGAAAAATTC    1380

ATAAAATCAT TGTTTCATAT ATTTGACGGA GACAATGAAA TTTTACAGAT CGTGGATGAG    1440

TTATCTGAAG ATATAACTAA ATATTTTATG AAACTATAAA AGGTTATATA TTT          1493
```

(2) INFORMATION FOR SEQ ID NO:39:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 12 base pairs

```
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: DNA (genomic)

     (x) PUBLICATION INFORMATION:
          (H) DOCUMENT NUMBER: WO 92/13884
          (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:39:
```

CAAGAACAAC AA   12

(2) INFORMATION FOR SEQ ID NO:40:

```
     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 12 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: DNA (genomic)

     (x) PUBLICATION INFORMATION:
          (H) DOCUMENT NUMBER: WO 92/13884
          (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:
```

GGTTATATAT TT   12

(2) INFORMATION FOR SEQ ID NO:41:

```
     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 1482 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: DNA (genomic)

    (ix) FEATURE:
          (A) NAME/KEY: CDS
          (B) LOCATION: 1..1482

     (x) PUBLICATION INFORMATION:
          (H) DOCUMENT NUMBER: WO 92/13884
          (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:
```

CAA GAA CAA CAA AGC GAT CTA GAA CAA GAG AGA CGT GCT AAA GAA AAG   48
Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys
 1   5   10   15

```
TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA GAT AGA CTT GCT AAA GAA        96
Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Asp Arg Leu Ala Lys Glu
            20              25              30

AAG TTA CAA GAG CAG CAA AGC GAT TTA GAA CAA GAG AGA CTT GCT AAA       144
Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Leu Ala Lys
        35              40              45

GAA AAG TTG CAA GAA CAA CAA AGC GAT CTA GAA CAA GAG AGA CGT GCT       192
Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala
    50              55              60

AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA GAG AGA CGT       240
Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg
65              70              75              80

GCT AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA GAT AGA       288
Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Asp Arg
            85              90              95

CTT GCT AAA GAA AAG TTA CAA GAG CAG CAA AGC GAT TTA GAA CAA GAG       336
Leu Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu
            100             105             110

AGA CGT GCT AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA       384
Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln
        115             120             125

GAG AGA CGT GCT AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA       432
Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu
    130             135             140

CAA GAG AGA CTT GCT AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA       480
Gln Glu Arg Leu Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu
145             150             155             160

GAA CAA GAG AGA CGT GCT AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT       528
Glu Gln Glu Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp
            165             170             175

TTA GAA CAA GAG AGA CGT GCT AAA GAA AAG TTG CAA GAA CAA CAA AGC       576
Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser
            180             185             190

GAT TTA GAA CAA GAG AGA CGT GCT AAA GAA AAG TTG CAA GAG CAG CAA       624
Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln
        195             200             205

AGA GAT TTA GAA CAA AGG AAG GCT GAT ACG AAA AAA AAT TTA GAA AGA       672
Arg Asp Leu Glu Gln Arg Lys Ala Asp Thr Lys Lys Asn Leu Glu Arg
    210             215             220

AAA AAG GAA CAT GGA GAT ATA TTA GCA GAG GAT TTA TAT GGT CGT TTA       720
Lys Lys Glu His Gly Asp Ile Leu Ala Glu Asp Leu Tyr Gly Arg Leu
225             230             235             240
```

```
GAA ATA CCA GCT ATA GAA CTT CCA TCA GAA AAT GAA CGT GGA TAT TAT        768
Glu Ile Pro Ala Ile Glu Leu Pro Ser Glu Asn Glu Arg Gly Tyr Tyr
                245                 250                 255

ATA CCA CAT CAA TCT TCT TTA CCT CAG GAC AAC AGA GGG AAT AGT AGA        816
Ile Pro His Gln Ser Ser Leu Pro Gln Asp Asn Arg Gly Asn Ser Arg
                260                 265                 270

GAT TCC AAG GAA ATA TCT ATA ATA GAA AAA ACA AAT AGA GAA TCT ATT        864
Asp Ser Lys Glu Ile Ser Ile Ile Glu Lys Thr Asn Arg Glu Ser Ile
                275                 280                 285

ACA ACA AAT GTT GAA GGA CGA AGG GAT ATA CAT AAA GGA CAT CTT GAA        912
Thr Thr Asn Val Glu Gly Arg Arg Asp Ile His Lys Gly His Leu Glu
        290                 295                 300

GAA AAG AAA GAT GGT TCA ATA AAA CCA GAA CAA AAA GAA GAT AAA TCT        960
Glu Lys Lys Asp Gly Ser Ile Lys Pro Glu Gln Lys Glu Asp Lys Ser
305                 310                 315                 320

GCT GAC ATA CAA AAT CAT ACA TTA GAG ACA GTA AAT ATT TCT GAT GTT       1008
Ala Asp Ile Gln Asn His Thr Leu Glu Thr Val Asn Ile Ser Asp Val
                325                 330                 335

AAT GAT TTT CAA ATA AGT AAG TAT GAG GAT GAA ATA AGT GCT GAA TAT       1056
Asn Asp Phe Gln Ile Ser Lys Tyr Glu Asp Glu Ile Ser Ala Glu Tyr
                340                 345                 350

GAC GAT TCA TTA ATA GAT GAA GAA GAA GAT GAT GAA GAC TTA GAC GAA       1104
Asp Asp Ser Leu Ile Asp Glu Glu Glu Asp Asp Glu Asp Leu Asp Glu
                355                 360                 365

TTT AAG CCT ATT GTG CAA TAT GAC AAT TTC CAA GAT GAA GAA AAC ATA       1152
Phe Lys Pro Ile Val Gln Tyr Asp Asn Phe Gln Asp Glu Glu Asn Ile
    370                 375                 380

GGA ATT TAT AAA GAA CTA GAA GAT TTG ATA GAG AAA AAT GAA AAT TTA       1200
Gly Ile Tyr Lys Glu Leu Glu Asp Leu Ile Glu Lys Asn Glu Asn Leu
385                 390                 395                 400

GAT GAT TTA GAT GAA GGA ATA GAA AAA TCA TCA GAA GAA TTA TCT GAA       1248
Asp Asp Leu Asp Glu Gly Ile Glu Lys Ser Ser Glu Glu Leu Ser Glu
                405                 410                 415

GAA AAA ATA AAA AAA GGA AAG AAA TAT GAA AAA ACA AAG GAT AAT AAT       1296
Glu Lys Ile Lys Lys Gly Lys Lys Tyr Glu Lys Thr Lys Asp Asn Asn
                420                 425                 430

TTT AAA CCA AAT GAT AAA AGT TTG TAT GAT GAG CAT ATT AAA AAA TAT       1344
Phe Lys Pro Asn Asp Lys Ser Leu Tyr Asp Glu His Ile Lys Lys Tyr
        435                 440                 445

AAA AAT GAT AAG CAG GTT AAT AAG GAA AAG GAA AAA TTC ATA AAA TCA       1392
Lys Asn Asp Lys Gln Val Asn Lys Glu Lys Glu Lys Phe Ile Lys Ser
    450                 455                 460
```

```
TTG TTT CAT ATA TTT GAC GGA GAC AAT GAA ATT TTA CAG ATC GTG GAT        1440
Leu Phe His Ile Phe Asp Gly Asp Asn Glu Ile Leu Gln Ile Val Asp
465                 470                 475                 480

GAG TTA TCT GAA GAT ATA ACT AAA TAT TTT ATG AAA CTA TAA                1482
Glu Leu Ser Glu Asp Ile Thr Lys Tyr Phe Met Lys Leu
                485                 490
```

(2) INFORMATION FOR SEQ ID NO:42:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 12 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: DNA (genomic)

    (ix) FEATURE:
        (A) NAME/KEY: CDS
        (B) LOCATION: 1..12

    (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:42:

```
AAG GTT ATA TAT                                                         12
Lys Val Ile Tyr
 1
```

(2) INFORMATION FOR SEQ ID NO:43:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 12 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: DNA (genomic)

    (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:43:

```
CAAGAACAAC AA                                                           12
```

(2) INFORMATION FOR SEQ ID NO:44:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 12 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single

          (D) TOPOLOGY: linear

     (ii) MOLECULE TYPE: DNA (genomic)

      (x) PUBLICATION INFORMATION:
           (H) DOCUMENT NUMBER: WO 92/13884
           (J) PUBLICATION DATE: 20-AUG-1992

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:

ATGAAACTAT AA   12

(2) INFORMATION FOR SEQ ID NO:45:

      (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 1482 base pairs
           (B) TYPE: nucleic acid
           (C) STRANDEDNESS: single
           (D) TOPOLOGY: linear

     (ii) MOLECULE TYPE: DNA (genomic)

     (ix) FEATURE:
           (A) NAME/KEY: CDS
           (B) LOCATION: 1..1482

      (x) PUBLICATION INFORMATION:
           (H) DOCUMENT NUMBER: WO 92/13884
           (J) PUBLICATION DATE: 20-AUG-1992

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:45:

CAA GAA CAA CAA AGC GAT CTA GAA CAA GAG AGA CGT GCT AAA GAA AAG   48
Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys
1   5   10   15

TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA GAT AGA CTT GCT AAA GAA   96
Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Asp Arg Leu Ala Lys Glu
            20   25   30

AAG TTA CAA GAG CAG CAA AGC GAT TTA GAA CAA GAG AGA CTT GCT AAA   144
Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Leu Ala Lys
        35   40   45

GAA AAG TTG CAA GAA CAA CAA AGC GAT CTA GAA CAA GAG AGA CGT GCT   192
Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala
    50   55   60

AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA GAG AGA CGT   240
Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg
65   70   75   80

GCT AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA GAT AGA   288
Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Asp Arg
                85   90   95

```
CTT GCT AAA GAA AAG TTA CAA GAG CAG CAA AGC GAT TTA GAA CAA GAG        336
Leu Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu
            100             105             110

AGA CGT GCT AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA        384
Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln
        115             120             125

GAG AGA CGT GCT AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA        432
Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu
        130             135             140

CAA GAG AGA CTT GCT AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA        480
Gln Glu Arg Leu Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu
145             150             155             160

GAA CAA GAG AGA CGT GCT AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT        528
Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp
            165             170             175

TTA GAA CAA GAG AGA CGT GCT AAA GAA AAG TTG CAA GAA CAA CAA AGC        576
Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser
            180             185             190

GAT TTA GAA CAA GAG AGA CGT GCT AAA GAA AAG TTG CAA GAG CAG CAA        624
Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln
        195             200             205

AGA GAT TTA GAA CAA AGG AAG GCT GAT ACG AAA AAA AAT TTA GAA AGA        672
Arg Asp Leu Glu Gln Arg Lys Ala Asp Thr Lys Lys Asn Leu Glu Arg
    210             215             220

AAA AAG GAA CAT GGA GAT ATA TTA GCA GAG GAT TTA TAT GGT CGT TTA        720
Lys Lys Glu His Gly Asp Ile Leu Ala Glu Asp Leu Tyr Gly Arg Leu
225             230             235             240

GAA ATA CCA GCT ATA GAA CTT CCA TCA GAA AAT GAA CGT GGA TAT TAT        768
Glu Ile Pro Ala Ile Glu Leu Pro Ser Glu Asn Glu Arg Gly Tyr Tyr
            245             250             255

ATA CCA CAT CAA TCT TCT TTA CCT CAG GAC AAC AGA GGG AAT AGT AGA        816
Ile Pro His Gln Ser Ser Leu Pro Gln Asp Asn Arg Gly Asn Ser Arg
        260             265             270

GAT TCC AAG GAA ATG TCT ATA ATA GAA AAA ACA AAT AGA GAA TCT ATT        864
Asp Ser Lys Glu Met Ser Ile Ile Glu Lys Thr Asn Arg Glu Ser Ile
        275             280             285

ACA ACA AAT GTT GAA GGA CGA AGG GAT ATA CAT AAA GGA CAT CTT GAA        912
Thr Thr Asn Val Glu Gly Arg Arg Asp Ile His Lys Gly His Leu Glu
        290             295             300

GAA AAG AAA GAT GGT TCA ATA AAA CCA GAA CAA AAA GAA GAT AAA TCT        960
Glu Lys Lys Asp Gly Ser Ile Lys Pro Glu Gln Lys Glu Asp Lys Ser
305             310             315             320
```

```
GCT GAC ATA CAA AAT CAT ACA TTA GAG ACA GTA AAT ATT TCT GAT GTT     1008
Ala Asp Ile Gln Asn His Thr Leu Glu Thr Val Asn Ile Ser Asp Val
                325                 330                 335

AAT GAT TTT CAA ATA AGT AAG TAT GAG GAT GAA ATA AGT GCT GAA TAT     1056
Asn Asp Phe Gln Ile Ser Lys Tyr Glu Asp Glu Ile Ser Ala Glu Tyr
                340                 345                 350

GAC GAT TCA TTA ATA GAT GAA GAA GAA GAT GAT GAA GAC TTA GAC GAA     1104
Asp Asp Ser Leu Ile Asp Glu Glu Glu Asp Asp Glu Asp Leu Asp Glu
                355                 360                 365

TTT AAG CCT ATT GTG CAA TAT GAC AAT TTC CAA GAT GAA GAA AAC ATA     1152
Phe Lys Pro Ile Val Gln Tyr Asp Asn Phe Gln Asp Glu Glu Asn Ile
                370                 375                 380

GGA ATT TAT AAA GAA CTA GAA GAT TTG ATA GAG AAA AAT GAA AAT TTA     1200
Gly Ile Tyr Lys Glu Leu Glu Asp Leu Ile Glu Lys Asn Glu Asn Leu
385                 390                 395                 400

GAT GAT TTA GAT GAA GGA ATA GAA AAA TCA TCA GAA GAA TTA TCT GAA     1248
Asp Asp Leu Asp Glu Gly Ile Glu Lys Ser Ser Glu Glu Leu Ser Glu
                405                 410                 415

GAA AAA ATA AAA AAA GGA AAG AAA TAT GAA AAA ACA AAG GAT AAT AAT     1296
Glu Lys Ile Lys Lys Gly Lys Lys Tyr Glu Lys Thr Lys Asp Asn Asn
                420                 425                 430

TTT AAA CCA AAT GAT AAA AGT TTG TAT GAT GAG CAT ATT AAA AAA TAT     1344
Phe Lys Pro Asn Asp Lys Ser Leu Tyr Asp Glu His Ile Lys Lys Tyr
                435                 440                 445

AAA AAT GAT AAG CAG GTT AAT AAG GAA AAG GAA AAA TTC ATA AAA TCA     1392
Lys Asn Asp Lys Gln Val Asn Lys Glu Lys Glu Lys Phe Ile Lys Ser
    450                 455                 460

TTG TTT CAT ATA TTT GAC GGA GAC AAT GAA ATT TTA CAG ATC GTG GAT     1440
Leu Phe His Ile Phe Asp Gly Asp Asn Glu Ile Leu Gln Ile Val Asp
465                 470                 475                 480

GAG TTA TCT GAA GAT ATA ACT AAA TAT TTT ATG AAA CTA TAA            1482
Glu Leu Ser Glu Asp Ile Thr Lys Tyr Phe Met Lys Leu
                485                 490
```

(2) INFORMATION FOR SEQ ID NO:46:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 12 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: DNA (genomic)

    (ix) FEATURE:
        (A) NAME/KEY: CDS